

Entrepreneurship and SMEs: A Bibliometric Analysis Amidst COVID-19 Crisis

ABSTRACT

Purpose- The remarkable concept of entrepreneurship has attracted scholars' attention for its relevance to small and medium-sized enterprises (SMEs). Entrepreneurship and SMEs (E&SMEs) have been globally acknowledged as instruments for achieving economic growth and development as well as employment creation. Based on bibliometric and distance-based visualization of similarities (VOS) analysis, the purpose of this paper is to outline a broad-spectrum perspective of the structure of research in entrepreneurship and SMEs, identifying the most prominent journals, country contributions, top-cited authors and articles in this field, as well, reporting the standard bibliometric indicators such as the growth of publications, authorship patterns, collaboration, and prolific authors.

Design/methodology/approach- The paper uses the data from Scopus online database as of June 2022. Based on 'key-terms' search results, 287 valid documents were obtained for further analysis using VOS viewer software and Harzing's Publish or Perish for citation metrics and analysis.

Findings- Sustainability (Switzerland) Journal and Journal of Entrepreneurship in Emerging Economies are the most relevant journals in the field. Among many authors, concerning the frequency of citations, Fairlie's (2020) article emerges as the most cited article with 85 cites and an average of 42.5 citations per year, followed by Brown and Rocha's (2020) article emerges 80 cites and an average of 40 citations per year. The United States ranked as the most contributor country in productivity with 29 (10.10%) published documents.

Originality/value- This paper contributes to entrepreneurship and SMEs amidst COVID-19 crisis research by providing a global perspective on the concept's investigation using bibliometric data and graphical networks.

Keywords: Entrepreneurship, SMEs, COVID-19, Scopus Database, VOS Network Analysis.

1. INTRODUCTION

Since many nations have been affected by several crises, a lot of research has been done on crises during the last few decades [1]. Many researchers have offered numerous interpretations of the crisis concept, such as intense and unpredictable occurrences that endanger organizational survival [2-6]. On top of that, since the start of the global financial crisis at the end of 2007, studies of the crisis have grown increasingly in the academic community. The global economic crisis has created several challenges, including high unemployment and slow economic growth, and entrepreneurship has developed as a solution to these issues. Accordingly, many nations are implementing policies that encourage entrepreneurship as a tool to help their economy recover from the recent recession [1,7].

Above and beyond, during a crisis, entrepreneurship is crucial since it provides a constructivist perspective in the face of a turbulent business environment [7]. For instance, entrepreneurship and businesses can benefit from (beneficial effects) or suffer from (adverse effects) of a crisis. To begin with, "suffer from" the adverse effects reduce business activity and profits, impacts the individual personalities of business owners, and allows certain businesses to survive [8]. On the other hand, "benefit from" the beneficial effect of crises, such as the way entrepreneurs can drive the development of new opportunities and resources, fill gaps in existing ones and encourage the introduction of novel services and products [9].

Also, entrepreneurship can influence crises as well. Recent studies have demonstrated that entrepreneurship can mitigate crisis effects and help revive national economies and regional growth after a disaster [10]. Having said that, adopting new strategies or taking innovative approaches can enhance the entrepreneurial environment and encourage economic recovery. However, in many countries, a lack of an entrepreneurial culture, as well as financial and resources limits, are considered substantial barriers to establishing a business; thus, governmental actions and support to increase small and medium-sized enterprises (SMEs) access to capital and resources is a critic to enhance entrepreneurial environments [11]. SMEs play a critical part in today's business system as national economic engines that shape the backbone of the economy in both developed and developing economies [12]. Consequently, there has been growing awareness of entrepreneurship and SMEs' significant contribution to a country's economic, social, and environmental outline [13].

Regrettably, the novel Coronavirus Disease (COVID-19) economic shock is unsurpassed in its intensity and complexity. COVID-19 prevalence has exposed SMEs to an enormous economic threat. Thus, many small businesses have resorted to entrepreneurial practices, including updating their business models, services, and products to fulfil basic changes in consumer demand in order to remain in business [14] and rehabilitating resources available to minimize the societal impact of the crisis [10]. As a result of the economic downturn, several new business owners have entered the market and implemented innovative approaches for retaining and attracting customers [15]. Also, the unprecedented global pandemic, COVID-19, is causing abrupt shifts in society [16]. Several of these shifts and changes can be observed in current policy processes, which may lead to the quick deployment of novel solutions [17,18]. As a result of these developments, the pace of innovation can be accelerated to better fulfill societal needs. Nevertheless, the time needed to innovation respond depends on the strength of an idea and the dedication of the individuals working on it [19]. Thus, questions about the potential advantages of entrepreneurship to governments, institutions, and society have been raised throughout the crisis [20]. Even if businesses were already showing signs of entrepreneurialism in their day-to-day operations before the crisis, many uncertainties remain about how the situation will change [21]. Consequently, there is a growing body of research demonstrating the importance of entrepreneurs to economic growth, with a focus on learning from their strategies for creating and deploying innovative technologies [22]. However, there is a dearth of research [23,16] on how entrepreneurship is affected by global crisis like the COVID-19 epidemic.

With this trend, an ever-increasing body of research has been done on entrepreneurship and SMEs, which offers a valuable focus for concerted scholarly research. Accordingly, examining the nature and dynamics of published articles is a common technique among scholars who work in the fields of bibliometrics and bibliography. As able to track the evolution of the observed topic of interest [24], journal publication activity, or scientific discipline [25]. Pritchard [26] defined bibliometric as "*the application of statistical and mathematical methods to books and other media of communication.*" A bibliometric study is commonly used to evaluate the quality and quantity of published documents to identify patterns in a specific research topic. In other words, by conducting in-depth research on the characteristics of published literature, bibliometric analysis can reveal the academic strength of an institution and the potential of citation/co-citation models, thereby encouraging the investigation and clarification of the main work contents and progress of a certain discipline. Aside from simple numerical and statistical calculations, contemporary bibliometric approaches also take into account the weight of leading scholars and journals and stress the significance of a field's knowledge institutions and recent developments for the direction of future study.

Moreover, bibliographic databases like Scopus have advanced analytic tools to fully empower scholars to exploit the potential of accessible bibliographical data. Thus, according to Zakaria *et al.* [27], the most common bibliometric analysis indicators are publication classification, citations, authorship, publication impact, and country. Nonetheless, the bibliometric methodology is often divided into two forms of analysis: performance analysis and science mapping [25], evaluated using the number of citations or citations per year, total h-index or g-index, cite score, as well as other various matrices. The first deals with the productivity of individuals, institutions, and nations and the second deals with the prevalent themes in a scientific field. Notably, the ability to analyze publications' development, trend, or productivity by evaluating the quantity of publications in a specific research area.

Furthermore, to the contextual narrative, the current publications have emphasized the significance of entrepreneurship in the context of economic rehabilitation [28] and domestic economy entrepreneurial success [29] or as a trigger of future entrepreneurial intentions [30]. Consequently, through multidisciplinary approaches toward the issues of "*entrepreneurship*" and "*SMEs*", The academic community's interest in interpreting these phenomena from the perspectives of various scientific areas has grown as a result of research activities, especially with the prevalence of the COVID-19 crisis. The continuous expansion in the quantity of research articles recognizes the need to approach the analysis of such publications from the standpoint of bibliographic analysis as an effective means of interpreting the current literary corpus. Thus, this paper intends to address the following questions concerning entrepreneurship and SMEs (E&SMEs) amidst the COVID-19 crisis:

- Q1. Which journals have published the maximum number of papers?
Q2: In which years the maximum number of papers have been published?
Q3. Which subject area has the maximum number of published papers?
Q4. What are the most frequently appearing keywords?
Q5. Which are the most prolific countries?
Q6: What are the most cited and influential articles?
Q7. What are the potential future research directions of entrepreneurship and SMEs amidst crisis studies?

Therefore, this article will provide an overview of the development of research on E&SMEs and present the current state of the art in this field. This paper aims to provide an overview of bibliometric analysis and prior research on papers linked to entrepreneurship and SMEs in the midst of the COVID-19 crisis, as well as to highlight trends from previous research and map them to the global evolution of the subject. The remainder of this paper is organized as follows: First, describe the research techniques used in this article. Then, the analysis and results section present the information collected from the Scopus database documents. Next, the discussion, implication research limitation and future research direction. And finally, the conclusion section addresses the study's overall findings.

2. SAMPLE AND METHODOLOGY

The research sample was selected using data from Scopus, a database of scholarly articles. The exported data comprised complete bibliographic records, such as citation and bibliographical data, details about funding, the abstract, keywords, etc. The primary criteria for bibliographic unit research corresponded to scientific papers published between 2020 and 2022. The competitive nature of the Scopus bibliographic platform compared to other specialized databases was the major research subject of several scientific papers [31], and more comprehensive time coverage of recorded units was emphasized as its most significant advantage [32]. The following keywords have been used to search relevant articles which is relevant to the topic namely "entrepre*" AND "COVID*" OR "crisis" OR "crises" OR "pandemic*" AND "SME*" OR "small busines*" OR "small compan*" OR "small enterp*" OR "small fir*" OR "small and mediu*" AND EXCLUDE (Pubyear, 2006) as it was not meet the criteria of the study purpose, which are contained in the title of the articles. This study concentrated on the titles of the articles since they indicate the related topic that is derived from the research subject and the study's purpose.

Furthermore, Ahmi *et al.* [25] explained in their study that the title of an article is the first thing a reader sees; therefore, it is essential to grab their attention with relevant information. Fig. 1 shows the search strategy. In this study, errata documents excluded to avoid double counting and retracted documents that might create false-positive results. Based on the query, the results of the given criterion amounted to 287 scientific papers, of which bibliographic data was retrieved on 15 June 2022. The most significant number of documents were written in English (273), while scientific documents in Russian (8), Spanish (6), and Malay (1) were also registered. When scrutinizing the bibliometric analysis, some tools are available to examine the data, such as (1) Microsoft Excel to calculate the frequencies of the published materials and to design the relevant chart and graph; (2) VOSviewer (www.vosviewer.com) to construct and to visualize the bibliometric networks; and (3) Harzing's Publish and Perish software to calculate the citations metrics and some of the other frequencies.

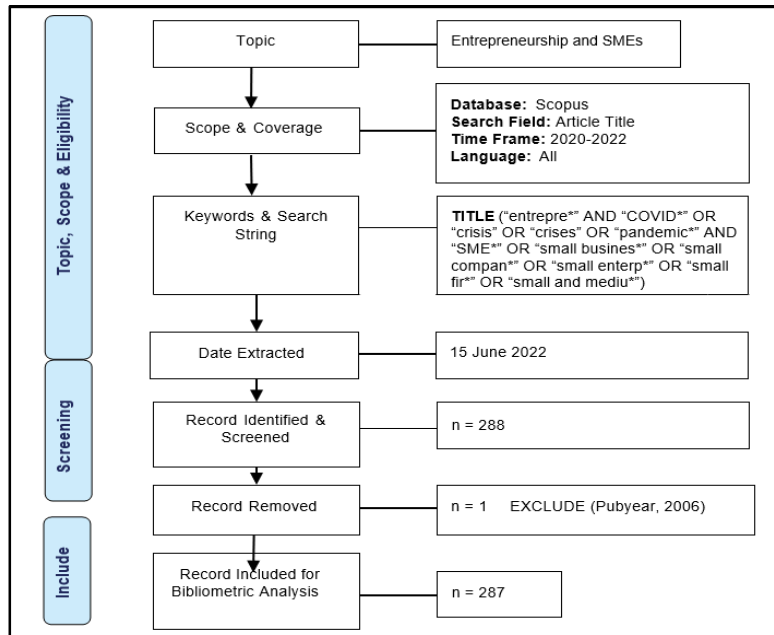


Fig.1. Flow diagram of the search strategy

3. ANALYSIS AND FINDINGS

The analysis of extracted scholarly works includes document and source types, published by year and annual growth, subject area, keyword analysis, geographical productivity, authorship and citation analysis. Most of the findings are reported as a frequency and percentage. Meanwhile, annual growth data is presented as a number of retrieved documents per year, including their frequency, percentage, and cumulative percentage until 15 June 2022. Further, driven by citation analysis and citation metrics, the top ten cited articles in entrepreneurship and SMEs amidst the COVID-19 crisis were presented.

3.1 Document and Source Type

The collected data is first examined based on the document and source types. Document types denote the document based on its originality, such as conference papers, articles, or book chapters. In contrast, source types denote the type of source documents, such as journals, conference proceedings, book series, books, or book trade publications. The conference paper listed under the document type may differ from those listed under the source type [27]. A paper was given at a conference; for example, it will be classed as a conference paper under document type. Nonetheless, based on its publication status, the same document may be categorized as a full journal article, conference proceeding, or book chapter under source type. Table 1 summarizes the documents published on E&SMEs amidst the COVID-19 crisis, spread into 10 document types.

Table 1. Document type

Document Type	Frequency	% (N=287)
Article	197	68.64%
Conference Paper	40	13.94%
Book Chapter	27	9.41%
Review	9	3.14%
Book	8	2.79%
Editorial	2	0.70%
Conference Review	1	0.35%
Data Paper	1	0.35%
Letter	1	0.35%
Note	1	0.35%

Total	287	100
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Moreover, driven from Table 1, the majority of documents were articles represented (68.64%) of the total publication compared to others as document types, as shown in Fig. 2.

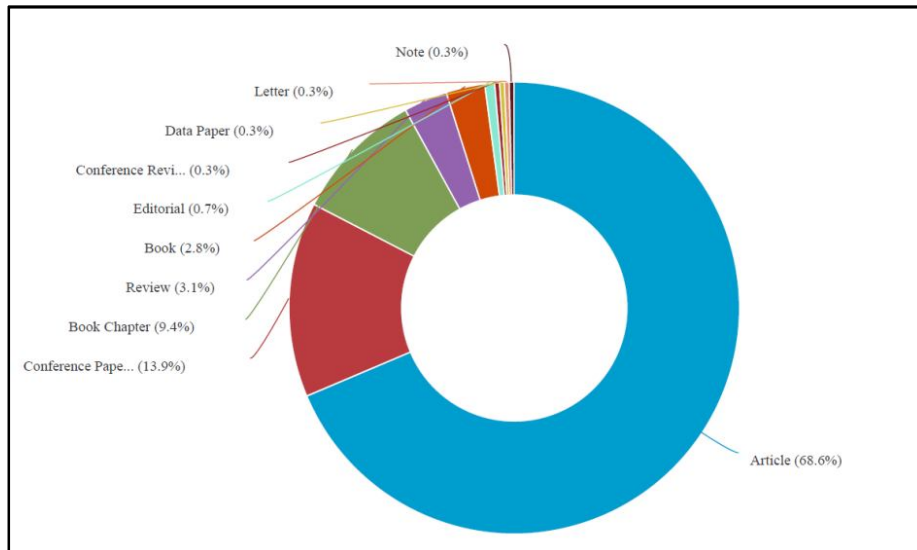


Fig. 2. Document by type

Furthermore, as shown in Table 2, the documents were classified into five different source types, with journals making up the largest share (210 documents, or 73.17%), followed by conference proceedings (30 documents, or 10.45%), books (26 documents, or 9.06%), book series (20 documents, or 6.97%), and trade journals (1 document, or 0.35%) to the total number of the publications.

Table 2. Source types

Source Type	Frequency	% (N=287)
Journal	210	73.17%
Conference Proceeding	30	10.45%
Book	26	9.06%
Book Series	20	6.97%
Trade Journal	1	0.35%
Total	287	100

Furthermore, Fig. 3 shows the most popular journals for E&SMEs amidst the COVID-19 crisis. The results show that the Journal Sustainability Switzerland with ten published documents (3.48%), the Journal of Entrepreneurship in Emerging Economies with nine published documents (3.14%), and similarly, Lecture Notes in Networks and Systems with nine published documents (3.14%), these journals are the most significant journals in this field. Thus, such journals are recognized as a platform for sharing knowledge between different approaches.

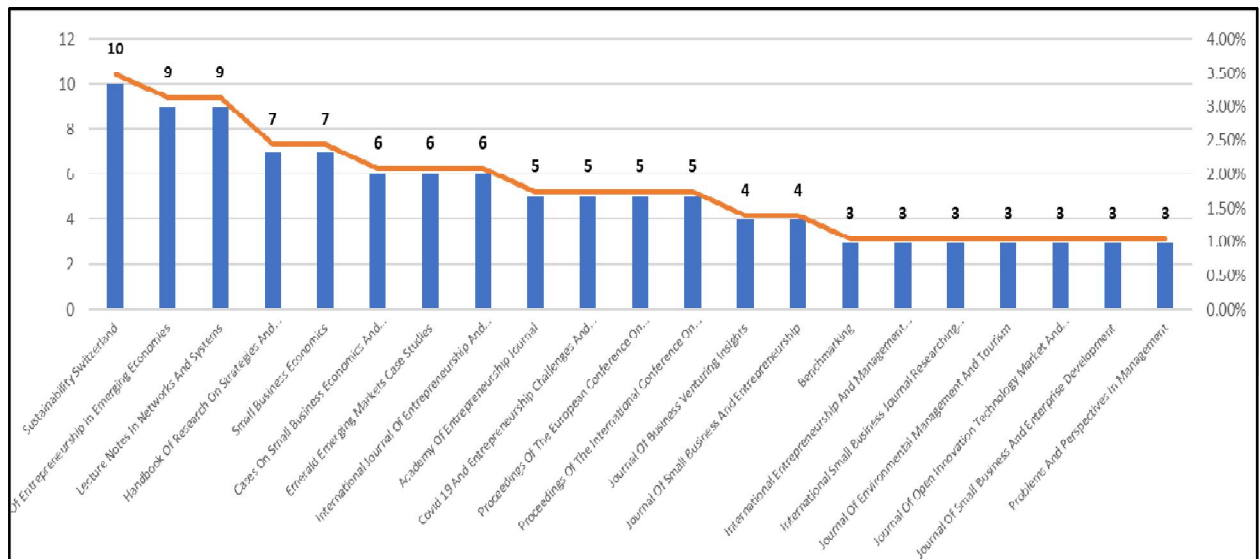


Fig. 3. Document by journals

3.2 Publication by Year and Annual Growth

The first publication covered in the Scopus database, which fulfils inclusion criteria by containing key terms in the article title, dates back to June 2020. Called “*Surveying Entrepreneurs’ Perception of Society in Times of Corona: A proposal*,” this paper has been published in Survey Research Methods, which is the official peer-reviewed journal of the European Survey Research Association (ESRA) and was categorized as an article, written by Weinhardt and Bartosch [33]. With the aim of scientific production’s examination, Fig. 4 presents the growing trend in the number of “*entrepreneurship, SMEs and COVID-19 crisis*” publications by year, from the 2020 year, representing “*The rise of E&SMEs production*”. The publication number exported from bibliographic data indicates that “*The rise of E&SMEs production*” period was significantly more fruitful. As a160 papers were published in 2021 compared to 86 papers were published in 2022, and 41 papers were published in 2020. Besides, observing Fig. 4, 55.7% of the total number of observed publications was published during the year 2021, which clearly shows that the E&SMEs and the COVID-19 crisis topic is attracting considerable research attention in recent years.

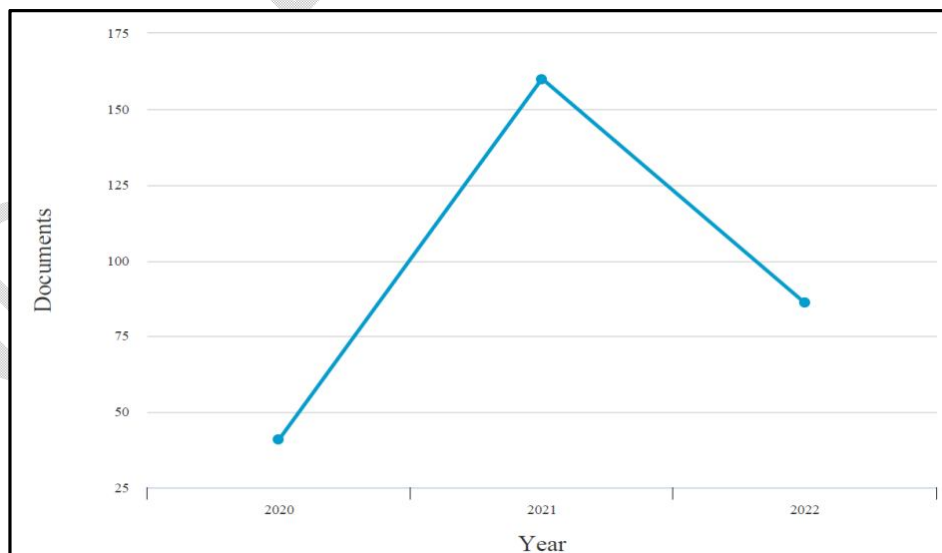


Fig. 4. Number of published papers per year

3.3 Subject Area

In addition, Table 3 summarizes how the published documents in this study are categorized by subject area. Research on E&SMEs and the COVID-19 crisis emerges from various disciplines, ranging from business, management and accounting, economics, econometrics and finance, social sciences, engineering, etc.

Table 3. Subject area

Subject Area	Frequency*	% (N=287)
Business, Management and Accounting	172	59.93%
Economics, Econometrics and Finance	97	33.80%
Social Sciences	64	22.30%
Engineering	34	11.85%
Computer Science	32	11.15%
Decision Sciences	24	8.36%
Environmental Science	23	8.01%
Energy	17	5.92%
Medicine	15	5.23%
Earth and Planetary Sciences	8	2.79%
Psychology	7	2.44%
Mathematics	6	2.09%
Materials Science	5	1.74%
Multidisciplinary	4	1.39%
Agricultural and Biological Sciences	3	1.05%
Arts and Humanities	3	1.05%
Chemistry	2	0.70%
Physics and Astronomy	2	0.70%
Chemical Engineering	1	0.35%
Health Professions	1	0.35%
Pharmacology, Toxicology and Pharmaceutics	1	0.35%
Total	287	100

*Some documents are categorized in multiple subject areas

Moreover, as shown in Table 3, most documents are in the business, management and accounting area with (59.93%) followed by the economics, econometrics and finance area with (33.80%), and social sciences with (22.30%) as shown in Fig. 5.

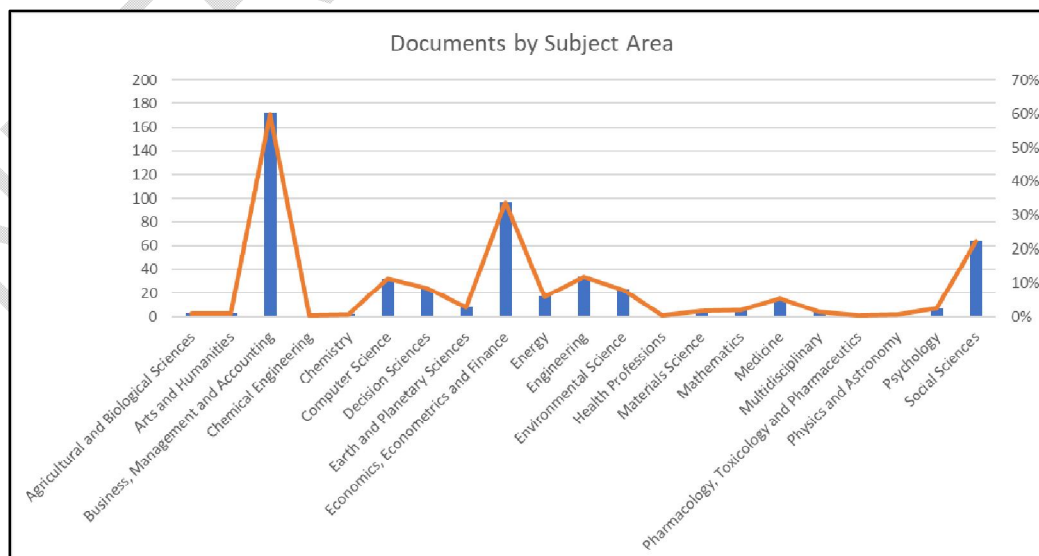


Fig. 5. Document by subject area

3.4 Keywords Co-Occurrences Network Analysis

The authors used VOS viewer, a software program for creating and visualizing bibliometric networks, to map the keywords provided for each document as part of the keywords analysis process (see Fig. 6 and Fig. 8). As shown in Fig. 6 VOS viewer-generated network visualization of the authors' keywords. The relative strength of the relationships between terms is represented by the color, circle size, text size, and thickness of connecting lines. Similar keywords tend to be grouped in the same cluster, as demonstrated by the use of the same color.

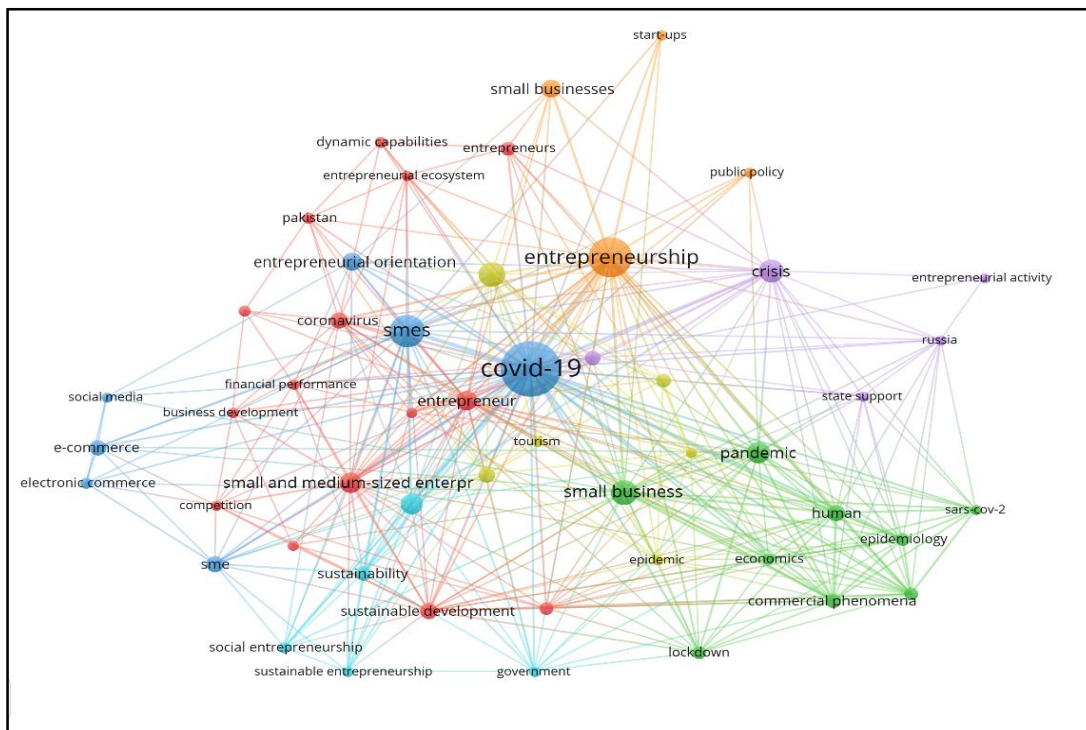


Fig. 6. Network visualization map of the author keywords

Moreover, according to Wang *et al.* [34], the analysis of keywords will reveal which topics are currently trending in each of the different subject areas, which can drive potential future research directions. Likewise, Zupic and Čater [35] pointed out that the knowledge domain topics are assumed to be represented by keywords, with the occurrence of these keywords in a document indicating connections between these themes. Fig.6 suggests that COVID-19, SMEs, entrepreneurial orientation, social media and e-commerce are closely related and usually co-occur together as the “Blue Cluster”. In the same vein, it is noticeable that sustainability, sustainable entrepreneurship, government and social entrepreneurship are closely relevant and usually co-occur together, such as in the “Turquoise Cluster”. Also, it is noticeable that dynamic capabilities, financial performance, competition, business development and entrepreneurial ecosystem and sustainable development are closely related to the “Red Cluster”.

Within the most prominent COVID-19 cluster in the visualization map, the following terms for keyword analysis are presented: “COVID-19,” “entrepreneurship,” “entrepreneurial orientation,” “crisis,” “small business,” “government,” “social entrepreneurship” and “sustainable development”. Since then, the COVID-19 cluster has seen 92 occurrences of the keyword “COVID-19.” That means entrepreneurial difficulties in the context of COVID-19 are discussed [36]; among this discussion is crisis management in which the vulnerability and ambiguity caused by COVID-19 offer an opportunity for innovation to comprise business difficulties [37-39]. Furthermore, the “entrepreneurship” keyword was the second-highest occurrence, seen 59 times. The study of entrepreneurship emphasizes business owners’ actions to ensure their companies will survive and thrive even when the economy is unstable [40,41]. Additionally, the “SMEs” keyword was the third-highest occurrence and has been seen 36 times. With the COVID-19 crisis, SMEs have seen the most negative and positive effects of an epidemic on their development [42]. This also implies that academic research on the various types of entrepreneurship impacted by the unpredictability of COVID-19 has used a wide variety of research approaches. One such study is by Khan [43], who used diaries to investigate the epidemic’s effects on remote workers’ anxiety and fatigue. While researchers Pereira and Patel [44] looked into the disparity between the hours lost by self-employed people and those of employed people, finding that members of Brazil’s ethnic minorities were disproportionately affected.

3.5 Geographical Distribution of Publications

Researchers from 40 countries have contributed to the publication in the E&SMEs area. All countries contribute to the productivity of publications. Fig. 7 demonstrates the total publication document by the top countries, which indicates the United States is ranked first in productivity with 29 (10.10%) published documents.

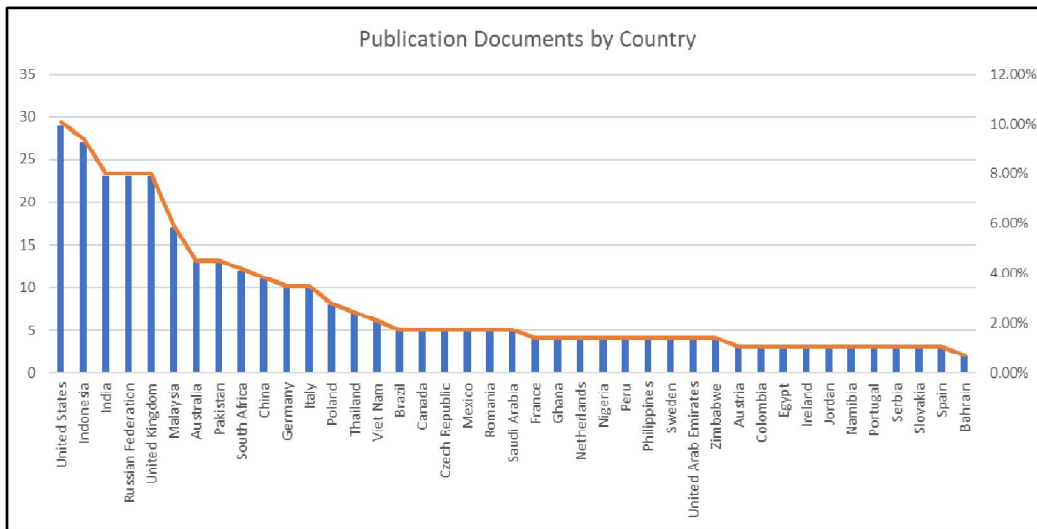


Fig. 7. Publication documents by country

Furthermore, Fig. 8 presents a network visualization map of the citation by countries, which indicates that the United States, Indonesia, United Kingdom, India, Russian Federation and Malaysia were among the countries that received a huge number of citations in the field of E&SMEs studies.

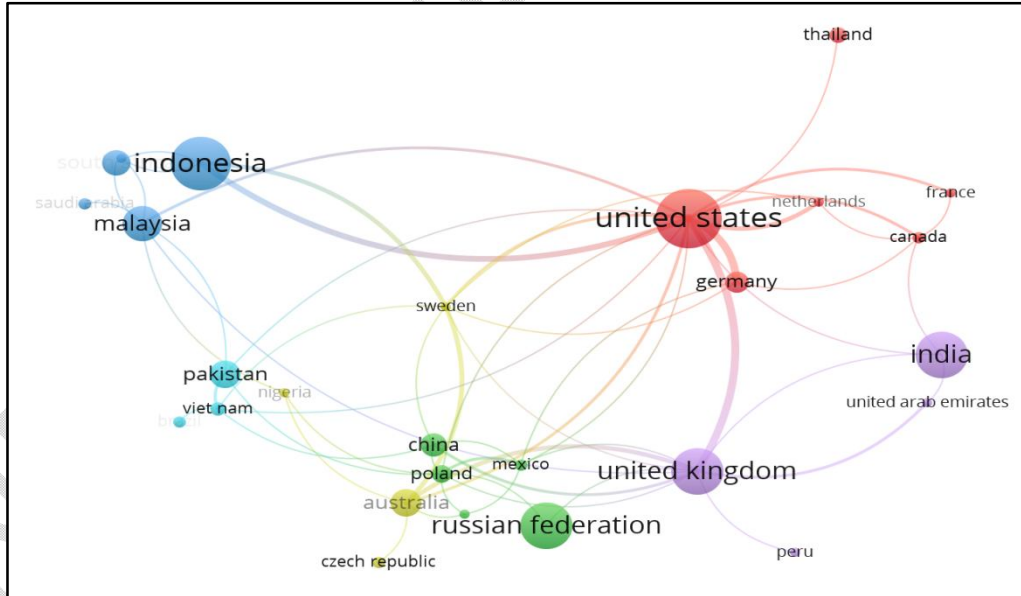


Fig. 8. Network visualization map of the citation by countries

3.6 Citation Analysis

As of 15 June 2022, the retrieved documents' citation metrics are summarized in Table 4, which displays the total citations for all papers retrieved together with the average citations per year. According to the data, 287 retrieved articles have been cited 1067 times over two years (2020-2022), with an annual citation rate of 533.50.

Table 4. Citations metrics

Metrics	Data
Publication years	2020-2022
Citation years	2 (2020-2022)
Papers	287
Citations	1067
Citations/year	533.50
Citations/paper	3.72
Citations/author	471.5
Papers/author	129.73
h-index	17
g-index	27

Moreover, the popularity and recognition of a document can be reflected by the number of times it is cited. Table 5 lists the top ten documents relevant to E&SMEs in terms of the author, year, number of citations and the average cites per year. One can see that the document entitled “*The impact of COVID-19 on small business owners: Evidence from the first three months after widespread social-distancing restrictions*” by Fairlie [45] produced the most influential document with the highest number of citations (85 citations or an average of 42.5 citations per year), following by the document entitled “*Entrepreneurial uncertainty during the COVID-19 crisis: Mapping the temporal dynamics of entrepreneurial finance*” by Brown and Rocha [46] produced the second most influential document with the number of citations (80 citations or an average of 40 citations per year).

Table 5. Top 10 highly cited articles

No.	Authors	Title	Year	Cites	Cites per Year
1	Fairlie	The impact of COVID-19 on small business owners: Evidence from the first three months after widespread social-distancing restrictions	2020	85	42.5
2	Brown and Rocha	Entrepreneurial uncertainty during the Covid-19 crisis: Mapping the temporal dynamics of entrepreneurial finance	2020	80	40
3	Thorgren and Williams	Staying alive during an unfolding crisis: How SMEs ward off impending disaster	2020	65	32.5
4	Bacq <i>et al.</i>	The COVID-19 Virtual Idea Blitz: Marshaling social entrepreneurship to rapidly respond to urgent grand challenges	2020	55	27.5
5	Castro and Zermeño	Being an entrepreneur post-COVID-19- resilience in times of crisis: a systematic literature review	2020	46	23
6	Zhang <i>et al.</i>	Impact of COVID-19 on China’s macroeconomy and agri-food system-an economy-wide multiplier model analysis	2020	44	22
7	Cepel <i>et al.</i>	The impact of the covid-19 crisis on the perception of business risk in the SME segment	2020	30	15
8	Tsilika <i>et al.</i>	Entrepreneurial bricolage in the aftermath of a shock. Insights from Greek SMEs	2020	28	14
9	Beland <i>et al.</i>	Short-term effect of COVID-19 on self-employed workers in Canada	2020	28	14
10	Sadiq <i>et al.</i>	Does green finance matter for sustainable entrepreneurship and environmental corporate social responsibility during COVID-19?	2022	27	27

4. DISCUSSIONS

The bibliometric study has been increasing in popularity as one of the approaches in demonstrating the trend of studies [25]. To date, a few bibliometric studies on E&SMEs and the COVID-19 crisis research have been published. The first publication covered in the Scopus database, which fulfils inclusion criteria by containing key terms in the article title, dates back to June 2020. Called "Surveying Entrepreneurs' Perception of Society in Times of Corona: A proposal," this paper has been published in Survey Research Methods, which is the official peer-reviewed journal of the European Survey Research Association (ESRA) and was categorized as an article, written by Weinhardt and Bartosch [33]. The present study, however, focused on the most recent publications on E&SMEs and the COVID-19 crisis research from 2020 to 2022. We retrieved 287 documents from the Scopus database using the defined search query. Previous bibliometric studies showed that the publications originated predominantly from academic institutions in the USA [1]. Our results are consistent with its findings whereby the United States have significantly contributed to the E&SMEs subject through scholarly works. This could be due to the presence of many institutions in the United States actively researching this field. One can see that the document entitled "The impact of COVID-19 on small business owners: Evidence from the first three months after widespread social-distancing restrictions" by Fairlie [45] produced the most influential document with the highest number of citations (85 citations or an average of 42.5 citations per year), following by the document entitled "Entrepreneurial uncertainty during the COVID-19 crisis: Mapping the temporal dynamics of entrepreneurial finance" by Brown and Rocha [46] produced the second most influential document with the number of citations (80 citations or an average of 40 citations per year).

4.1 Implication

The COVID-19 epidemic remains a major crisis in the modern world. Governments in countries where the new coronavirus was circulating took drastic steps, including social isolation, a nationwide lockdown, and restrictions on travel, mobility, and congregating, in order to stop the virus's spread and save lives [22]. Thus, businesses have begun moving their operations online [18], posing additional obstacles for entrepreneurs [47]. As a result of regulatory constraints, many businesses had to temporarily shutter their doors, while others were forced to operate at limited capacity [48]. As the pandemic's consequences persisted, these businesses also had to get inventive in every area of their operations (22). It necessitated that business owners adapt to their new environments, and that governments initiate legislative steps to support them by way of giving them with financial and non-financial support (22). Thus, in order to combat unfavourable economic situations, governments must establish policies and plans. Efforts should be made to enhance both the quantity and quality of start-ups, to learn the ins and outs of businesses, to back promising new ventures in their infancy, and to bring about a slow economic recovery. Various nations have used varying approaches in times of crisis. Rather than ignoring the unique circumstances of a crisis, a country should make some structural reforms in light of its current status and progress. Governments could take novel responses to crises like COVID-19, such as encouraging the creation of internet-based businesses to help individuals cope with their difficulties. A crisis-stricken economy is further hampered by the limitations imposed by a shift in the institutional environment. For entrepreneurs to aid in economic recovery, governments must strengthen institutional conditions [12-13]. Improvements in access to capital for small and medium-sized businesses are one way that several European countries are encouraging entrepreneurship. Thus, to better react to long-term crises, policymakers must address structural flaws, implement new commercial strategies, increase resilience, and strengthen institutional conditions through capital and other accessible resources.

4.2 Research Limitation

Despite the valuable insights provided by this paper, readers should still be aware of several limitations. To begin, this paper used particular queries/keywords to discover the initial list of scholarly works published as indexed by Scopus. Nonetheless, this method was prevalent in previous bibliometrics-related studies [25,27]. Although Scopus is one of the largest online databases indexing all scholarly papers, it still does not contain all sources available completely. As a result, some exclusions are to be expected from this paper. Moreover, no search query can fully contain all of the scholarly papers in this area. As a consequence, false positive and false adverse outcomes are always to be expected. Besides, the data in this study were from 2020 to June 2022, and new studies are being published almost every day.

Scopus' definition was used to estimate the ranking of authors in this study. Some authors may also enroll multiple names in Scopus or have their names spelt differently. Thus, it resulted in the inaccuracy of the productivity of their authorship and affiliation details. Also, we might have excluded some papers on E&SMEs and the COVID-19 crisis if the authors did not put our study inclusion descriptors in the article titles. Additionally, the citation count applied in assessing the research impact may not directly mirror the quality of each study. However, despite these limitations, this work presents a unique

look at E&SMEs and the COVID-19 crisis studies by presenting a more comprehensive, systematic, and objective evaluation. Previous qualitative review studies have mainly relied on subjective judgement, whereas a few quantitative review studies have merely described statistical data.

4.3 Future Research Direction

With business activities disrupted by the COVID-19 epidemic, enterprises have been compelled to rethink their approaches in the face of a major crisis [49]. To successfully recover from a crisis, entrepreneurs should implement crisis management techniques [50], adopt a socially embedded perspective, and concentrate on innovative approaches [51]. Moreover, the post-crisis revival of entrepreneurship requires either a shift in the dominant orientation toward entrepreneurship or the development of a novel form of entrepreneurship. Examples such value co-creation include collaborative product design and open innovation, which can aid in the growth of an entrepreneurial ecosystem (22). Henceforth, there has to be more focus on these developing tendencies since a new body of knowledge is required to help organizations become more robust and competitive. Therefore, researchers, policymakers, and nations alike need to be prepared with tactics and strategies for dealing with tense situations, as there is no way to predict when or where a crisis will strike. Add to that, recent studies have demonstrated that entrepreneurship can mitigate crisis effects and help revive national economies and regional growth after a disaster, also, given the fact that SMEs play a critical part in today's business system as national economic engines that shape the backbone of the economy, there has been growing awareness of entrepreneurship and SMEs' significant contribution to a country's economic, social, and environmental outline. However, small business management is an applied field, and the managerial techniques designed for huge corporations are not always applicable to the needs of smaller businesses. That is why it is crucial to establish hypotheses, analyze data, make suggestions from small enterprises' perspectives, and modify the techniques and theories acquired from other domains. In order to accomplish these aims, researchers will need to understand the unique characteristics of small businesses, such as their size, resources, communication preferences, ownership structure, and corporate governance. Thus, there is a great deal of room for, and opportunity for, further study in the fields of entrepreneurship and small and medium-sized enterprises.

5. CONCLUSION

This study reviewed the available research in the field of E&SMEs in the heart of the COVID-19 crisis from 2020 to 2022. Using data visualization techniques, this study analyzed the characteristics of published publications in this area from various perspectives.

First, the study indicated the trend of previous studies using specified bibliometric indicators derived from the Scopus database. Overall, bibliometric details of 287 documents were extracted from the Scopus database. The results indicate that English becomes a primary language in about 95.12% of the retrieved documents. The data also shows a growing trend in the number of E&SMEs and the COVID-19 crisis publications as 55.7% of the total number of observed publications was published during the year 2021, which represents "*The rise of E&SMEs production*". Furthermore, issues pertaining to E&SMEs and the COVID-19 crisis get attention from diverse subject areas such as business, management and accounting, economics, econometrics and finance, social sciences, engineering, etc. Nevertheless, 172 or 59.93% of examined documents were classified under business, management and accounting.

Then, this paper discovered that there had been strong international exchanges and collaboration in the field of E&SMEs. Numerous citations in flipped E&SMEs research came from scholars in the United States, Indonesia, the United Kingdom, India, the Russian Federation, and Malaysia, respectively. Nonetheless, several European and Asian countries have significantly contributed to the E&SMEs subject through scholarly works.

Next, a complete examination of keyword characteristics was carried out in order to find hot subjects that change significantly throughout time. Co-occurrence analysis found that research hotspots primarily focus on the issues of "COVID-19," "entrepreneurship," "entrepreneurial orientation," "crisis," "small business," "government," "social entrepreneurship" and "sustainable development". The study supplements and extends on earlier reviews by conducting co-citation and co-occurrence network analyses and presenting them in a comprehensive and transparent format. Moreover, quantitatively traced the evolution of E&SMEs and the COVID-19 crisis studies from 2020 to 2022. The study review, in fact, helps to highlight how the frontiers of the entrepreneurship and SMEs field evolve over time and give readers a better understanding of the rapidly developing body of work in entrepreneurship and SMEs development.

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